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Abstract of the disclosure

Disclosed are a method and a system for predicting precipitation kinetics in precipitation-hardenable alloys, such as the 7000 series aluminum alloys, and for optimizing conditions for thermal treatment thereof. The method includes the steps of measuring a real-time temperature of an alloy component during the thermal treatment process, and using a signal in dependence upon the real-time temperature to predict, using executable code, a current state of the alloy component. The executable code includes a series of rate equations and initial parameters for a particular alloy. Optionally, the initial parameters for the particular alloy are provided after the code is in execution. The thermal treatment process is terminated when a predetermined state of the alloy component is predicted.

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